Behavioral changes and hygiene practices of older adults in Japan during the COVID-19 emergency

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Abstract

Background: On April 7, 2020, Japan declared a state of emergency due to the coronavirus disease 2019 (COVID-19) with the associated social distancing likely to have had a great impact on older adults' lifestyle and health. The aim of this study was to explore the behavioral changes and personal hygiene practices of older adults during the COVID-19 emergency.

Methods: A cross-sectional telephonic survey was conducted with the participants of the Kawasaki Aging and Wellbeing Project (KAWP), which is an on-going longitudinal cohort study of older adults aged 85 years or older. The interviews were conducted using a structured questionnaire consisting of 11 closed questions regarding behavioral changes and personal hygiene practices during the state of emergency. Sociodemographic and health data were obtained from the KAWP baseline survey conducted 2.2 years prior to the telephonic survey.

Results: Overall, 487 participants from the KAWP responded to the telephonic survey (response rate: 89.2%). 94.5% of the respondents reported no changes in basic lifestyle habits, such as eating, sleeping, smoking, and drinking, whereas 28.1% reported a decrease in the amount of physical activity, and 54.6% reported going out less frequently. One third of the respondents reported a decrease in the number of people to converse with, as well as the amount of time to converse. For personal hygiene practices, 93.8% reported wearing a mask when they went out, and 50.3% reported a more frequent washing of hands. Multiple logistic regression analysis revealed that engagement in leisure time physical activity at baseline (odds ratio [OR] = 2.36, 95% confidence interval [CI] = 1.45−3.82), smartphone ownership (OR = 1.92, 95% CI = 1.23−2.99), and visual impairment (OR = 1.77; 95% CI = 1.11−2.82) were independently associated with decreased physical activity. Female respondents, engagement in leisure-time physical activity, frequent community interaction, and smartphone ownership were significantly associated with more frequent handwashing.

Conclusions: The study revealed that older adults in an urban setting responded to the COVID-19 emergency with behavioral changes. The findings of this study have implications for the design of preventive strategies to maintain the health and wellbeing of at-risk older adults.

Background

The coronavirus disease 2019 (COVID-19) pandemic has affected over 33 million people worldwide, as of September 30, 2020, causing a global public health emergency. Older adults, particularly those with preexisting comorbidities, are at greater risk for severe COVID-19 outcomes, including hospital admission and death. Given the high mortality rate among those aged 80 years or older [1] and lack of evidence-based treatment and vaccines for COVID-19, social distancing is of prime importance for preventing the spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) among the older population. However, social distancing can lead both physical inactivity and social isolation. These create concerns about the increasing risks of sarcopenia, depression, and other chronic diseases of aging.[2]

Delays in vaccine development and uncertainties about the convergence of COVID-19 outbreaks necessitate an urgent need to establish a practical method to prevent SARS-CoV-2 transmission and maintain the health and wellbeing of the older adults. On April 7, 2020, Japan declared a state of emergency in seven prefectures, including the Greater Tokyo Area.[3] It aimed to reduce social contact between people by 80%, and continued it until May 25, 2020. In this telephonic survey, we utilized an on-going longitudinal cohort of older adults living in an affected community, and reported about their behavioral changes and personal hygiene practices during the state of emergency and examined the sociodemographic and health characteristics associated with their responses to the COVID-19 emergency.

Methods

Study population

The Kawasaki Aging and Wellbeing Project (KAWP) is a longitudinal cohort study of older adults aged between 85 and 89 years with no physical disability at baseline. The inclusion criteria of KAWP are: 1) being a resident of Kawasaki city, a city with a population of 1.5 million, located in the Greater Tokyo Area and aged between 85 and 89 years; 2) having no limitations in the basic activities of daily living (ADL); and 3) being able to visit the study site, the Kawasaki Municipal Hospitals independently.

Between March 2017 and December 2018, KAWP recruited 1,026 independent seniors and conducted a baseline comprehensive assessment, including assessment of physical, mental, and cognitive function as well as social participation. Thereafter, the participants were scheduled for telephonic surveys every six months in order to monitor their vital status, any incidental disabilities, falls and fractures, and hospitalizations until December 2024 or until they dropped out.

In this study, we selected 546 people who were scheduled for follow-up telephonic surveys between May 25, 2020, the day the state of emergency was lifted, and the end of August 2020. Written informed consent to participate in the KAWP was obtained from all participants. The KAWP was approved by the ethics committee of the Keio University School of Medicine (ID: 20160297) and was registered in the University Hospital Medical Information Network Clinical Trial Registry as an observational study (ID: UMIN000026053).

Measurements

The interviews were conducted by two trained interviewers between May 25 and August 31, 2020 using a structured questionnaire (Supplementary file 1) in addition to the usual six-month follow-up telephonic survey. The questionnaire consisted of 11 closed ended questions and one open-ended question. Each interview took approximately 10–20 minutes to complete.

Sociodemographic and health data were obtained from the KAWP baseline survey conducted 2.2 years before the telephonic survey. The participants were invited to visit one of three Kawasaki Municipal Hospitals (Kawasaki, Ida, or Tama) and examined directly by experienced physicians using a study protocol that was harmonized with the Tokyo Oldest Old Survey on Total Health and Japan Semi-supercentenarian Study, both of which are managed by the Center for Supercentenarian Medical Research, Keio University School of Medicine.[4,5]

Instrumental activities of daily living (IADL) were assessed using the Lawton scale (0-5 points)[6], cognitive function was evaluated according to the Mini-Mental State Examination (MMSE; 0-30 point)[7], and depression was assessed using the Geriatric Depression Scale (GDS-15)[8]. Hearing and visual acuity were rated according to self-reported categories. Those who responded "need a loud voice or speak in his/her ears" or "cannot hear at all" were judged as having hearing impairment. Those who rated "poor" and "very poor" for eyesight were regarded as visually impaired. Engagement in leisure time physical activity was assessed using a self-reported question, "Do you take part in sports or exercise for health or as a leisure time activity other than walking?"[9] Self-reported community interaction was evaluated according to the following question: "How often do you meet or talk to people in the community you associate with (including phone and email exchanges)?" Here, a community is defined as an area that is about a 10-minute walk away.

Statistical analysis

Baseline characteristics are expressed as medians and interquartile ranges (IQR); categorical variables are shown as numbers and proportions. Crude odds ratio (OR) and 95% confident interval (CI) were calculated for behavioral factors such as decreased physical activity and conversation time and washing hands more. A multivariable logistic regression analysis is performed to examine the independent association between behavioral factors and those baseline characteristics, which had P-values <0.10 in the crude analysis. All analyses were performed using SPSS ver. 24.0 software (SPSS, Chicago, IL, USA), and results were considered statistically significant at a P -value of <0.05, and two-sided tests were applied.

Results

Of the 546 participants eligible for the telephonic survey during the study period, 25 were not contactable, 34 declined (7 were institutionalized, 11 had hearing problems, 7 had poor health, 3 did not consent, 5 had family reasons, and 1 had unknown reasons); thus, 487 respondents completed the telephonic questionnaire (response rate: 89.2%). The median age of the respondents was 89.3 (IQR: 88.3–90.6) years. More than half of the respondents were women (50.5%) and 45.0% of the respondents were widowed, and 47.4% had high school or higher education (Table 1). The median MMSE score was 26 (IQR, 24–28), and 15.8% had MMSE scores≤ 23. Only 12.7% of the respondents had a 1 ≥ IADL disability, whereas the majority were IADL independent.

Figure 1 shows the responses to the survey questions regarding behavioral changes and personal hygiene practices during the COVID-19 emergency. Among the responders, 424 (87.1%) were interviewed directly, whereas 63 (12.9%) responded by proxy. Overall, most respondents (94.5%) reported no changes in basic lifestyle, such as eating, sleeping, smoking, and drinking, whereas 28.1% reported a decrease in the amount of physical activity, and more than half (54.6%) reported reduced frequencies of going out. Similar percentages of respondents reported a decrease in the number of people to converse with, and a decreased amount of time to converse (35.7% and 32.6%, respectively). For personal hygiene practice, 93.8% reported wearing a mask when they went out, whereas only 50.3% reported washing hands more often, and a few (4.5%) monitored their body temperature.

Multiple logistic regression analysis revealed that engagement in leisure-time physical activity at baseline (OR = 2.36; 95% CI = 1.45–3.82), smartphone ownership (OR = 1.92, 95%CI = 1.23–2.99), and visual impairment (OR = 1.77, 95%CI = 1.11–2.82) were independently associated with a decreased amount of physical activity during COVID-19 emergency (Table 2). Frequent community interaction was the only factor associated with decreased conversation time with neighbors (OR = 0.32; 95%CI = 0.15–0.66). Being women, engaging in leisure-time physical activity, frequent community interaction, and smartphone ownership were significantly associated with more frequent washing of hands (Table 2).

Discussion

In this study, we used an on-going longitudinal cohort to explore the behavioral changes and hygiene practices of older adults during the COVID-19 emergency in an urban community in Japan. The majority of the older individuals went out less frequently during the declared state of emergency, likely because they adhered to the stay-at-home advice that was applicable to other age groups as well.[3] Engagement in leisure-time physical activity at baseline and smartphone ownership were independently associated with reduced physical activity during the COVID-19 emergency. These two measures were also associated with more frequent hand washing, suggesting that reductions in physical activity may be part of preventive behaviors to reduce social contact.

Individuals with health literacy, but lost resources (e.g., day center, gym, group activities) can still maintain their previous levels of physical activity if alternative resources, such as smartphone apps and home-exercise programs, are provided. These alternatives should be considered with adaptations for people with visual impairment. Our results did not show any association of IADL disability, cognitive impairment, or depression with decreased

physical activity during COVID-19 emergency. However, since frail older adults may already have been physically inactive, this questionnaire may have minimal effect, and hence, long-term effects on physical and mental health should be cautiously monitored by future follow-ups.

People who had frequent community interactions did not report a decrease in conversation time. The results indicate the potential importance of dense neighborhood networks in information exchange and prevention of loneliness in emergency situations.

Compared to the high compliance with wearing a mask while going out (93.8%), hand wash hygiene was relatively neglected (50.3%) by our older respondents. In an internet survey aimed at 3,301 adults in the United States of America aged ≥ 18 years in the 2015−2016 influenza season, washing hands often (83.2%) was the most commonly reported preventive behavior.[10] As recommended by the World Health Organization, hand hygiene is one of the most effective ways to reduce the spread of pathogens and prevent infections.[11] Given the relatively low smartphone ownership (26.9%) among older adults, both online technology and real-life physical communication (e.g., phone calls, local newspapers, and radio) should focus on increasing public health outreach.

There are important limitations to the present study. First, according to our study aims and eligibility criteria, we recruited community-dwelling, physically independent older adults for the KAWP. Thus, our respondents do not represent the general population with corresponding ages. Second, the present telephonic survey was conducted a median of 2.2-years after the baseline examination, thus the functional and psychosocial assessment may not reflect the respondents' state at the time of the survey. Therefore, these results should be interpreted with caution. Third, behavioral response to COVID-19 emergency may have been affected by the speed and scale of spread of SARS-CoV-2 transmission. During the emergency period, the maximum number of new COVID-19 patients per day was 18 (1.18 per 100,000 on April 11, 2020).[12] When comparing our results to the findings of other studies, these limitations should also be taken into account.

Conclusions

Despite these limitations, the findings of this study provide valuable data for designing preventive strategies to maintain the health and wellbeing of older adults who are at greater risk of both severe COVID-19 infection and the consequences of physical inactivity.

Declarations

Ethics approval and consent to participate

We have complied with all relevant regulations and guidelines for work with human subjects. The KAWP was approved by the ethics committee of the Keio University School of Medicine (ID: 20160297) and was registered in the University Hospital Medical Information Network Clinical Trial Registry as an observational study (ID: UMIN000026053). Written informed consent to participate in the KAWP was obtained from all participants.

Consent for publication

Not applicable

Availability of data and materials

The datasets analyzed in the current study will be available upon request with an appropriate research arrangement with approval of the Research Ethics Committee of Keio University School of Medicine for Clinical Research.

Competing interests

The authors have no conflicts of interest to declare.

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Authors' contributions

All the authors conceived the study design. YA, YO, YAbe, and MT participated in the data collection. YA, YO, YAbe, MT, and AH participated in the data analysis and interpretation. YA performed the final statistical analysis. YAbe assisted with the preparation of the data. YA drafted the report. TT and HU provided the critical revision of the draft. All the authors approved the final version of the report

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Abbreviations

COVID-19coronavirus disease 2019

KAWP: the Kawasaki Aging and Wellbeing Project

OR: odds ratio

CI: confidence interval

SARS-CoV-2: severe acute respiratory syndrome coronavirus 2

ADL: activities of daily living

IADL: instrumental activities of daily living

IQR: interquartile range

MMSE: mini-mental state examination

GDS-15: geriatric depression scale-15

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Tables

Table 1. Characteristics of the Respondents

Age at telephone survey, (IQR)	89.3	(88.3-90.6)
Time since basic survey, years. (IQR)	2.2	(1.7-3.0)
Female, n. (%)	246	(50.5)
Living alone[a], n. (%)	130	(26.7)
Marital status[a], n. (%)		
Married	246	(50.5)
Widowed	219	(45.0)
Divorce	11	(2.3)
Never married	8	(1.6)
Missing	3	(0.6)
High education[a], n. (%)	231	(47.4)
Missing	2	(0.4)
Subjective-rated health[a], n. (%)		
Very/good	202	(41.5)
Fair	216	(44.4)
Poor/very poor	66	(13.6)
Don't know	3	(0.6)
MMSE[a], (IQR)	26	(24-28)
MMSE[a] (≤ 23)	77	(15.8)
Missing	3	(0.6)
GDS[a], (IQR)	3	(1-4)
GDS[a] (≥ 5)	119	(24.4)
Missing	3	(0.6)
IADL[a], (IQR)	5	(5-5)
IADL[a] (≤ 4)	62	(12.7)
Hearing impairment[a], n. (%)	36	(7.4)
Missing	5	(1.0)
Visual impairment[a], n. (%)	119	(24.4)
Missing	6	(1.2)
Leisure time physical activity[a]	323	(66.3)
Missing	1	(0.2)
Frequency of community interaction[a], n. (%)	63	(12.9)
No	84	(17.2)
Several times/year	16	(3.3)
Several times/month	103	(21.1)
Several times/week	189	(38.8)
Everyday	63	(12.9)
Missing	8	(1.6)

Abbreviations: IQR: Interquartile range; MMSE: Mini-Mental State Examination; GDS: Geriatric Depression Scale; IADL: Instrumental activities of daily living.

Table 2. Factors associated with decreased physical activity and conversation time, and enhanced handwashing

Characteristics	Decreased physical activity				Decreased conversation time				Washing hand more			
	Crude		Multivariate		Crude		Multivariate		Crude		Multivariate	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Age	0.61	(0.83-1.12)			0.93	(0.82-1.06)			0.95	(0.84-1.08)		
Sex (female)	1.23	(0.82-1.82)			1.08	(0.74-1.58)			1.69	(1.18-2.42)	1.60	(1.09-2.33)
Living alone	1.03	(0.66-1.62)			0.92	(0.60-1.42)			1.41	(0.94-2.12)		
Widowed	1.14	(0.77-1.69)			1.09	(0.74-1.60)			1.30	(0.90-1.86)		
high education	0.77	(0.52-1.15)			1.00	(0.68-1.47)			1.24	(0.86-1.77)		
Self-rated health (very good/good)	0.96	(0.64-1.44)			0.7	(0.47-1.04)			1.30	(0.90-1.86)		
MMSE (≤23)	0.58	(0.32-1.05)	0.64	(0.34-1.20)	0.57	(0.33-1.01)	0.62	(0.35-1.10)	0.99	(0.61-1.62)		
GDS (≥5)	0.78	(0.49-1.26)			1.17	(0.75-1.80)			0.72	(0.47-1.08)		
IADL (≤4)	1.36	(0.77-2.40)			1.09	(0.62-1.92)			0.90	(0.53-1.53)		
Hearing impairment	1.28	(0.62-2.64)			0.98	(0.48-2.02)			1.10	(0.56-2.18)		
Visual impairment	1.72	(1.10-2.67)	1.77	(1.11-2.82)	1.26	(0.82-1.95)			1.09	(0.72-1.65)		
Leisure time physical activity	2.55	(1.59-4.09)	2.36	(1.45-3.82)	1.2	(0.80-1.81)			2.07	(1.41-3.05)	1.88	(1.26-2.80)
Frequent community interaction[a]	0.69	(0.37-1.29)			0.3	(0.14-0.63)	0.32	(0.15-0.66)	1.66	(0.96-2.85)	1.75	(0.99-3.09)
Smartphone ownership	2.03	(1.32-3.11)	1.92	(1.23-2.99)	0.96	(0.63-1.48)			1.58	(1.05-2.38)	1.69	(1.10-2.59)

Abbreviations: OR: Odds ratio; CI: Confidence interval; MMSE: Mini-Mental State Examination; GDS: Geriatric Depression Scale; IADL: Instrumental activities of daily living.

a Those who reported the frequency of community interaction was everyday

Figures
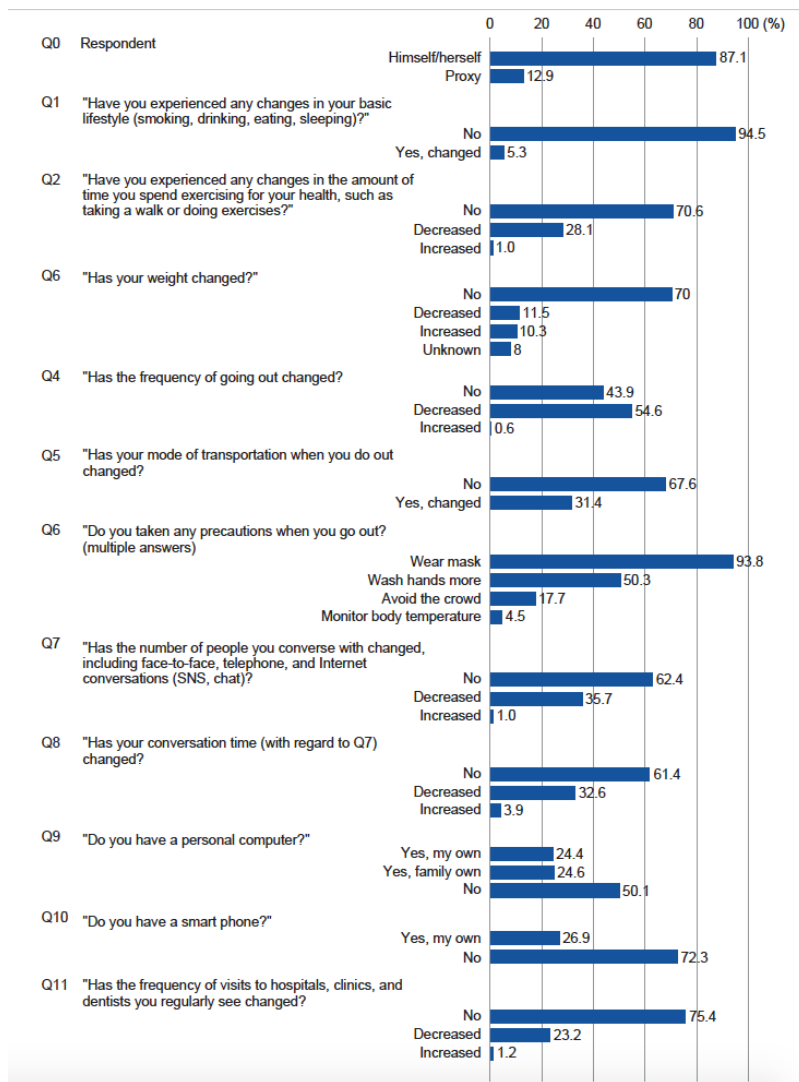
Figure 1

Behavioral changes and personal hygiene practice during the state of emergency due to COVID-19 outbreak. The number of missing values from Q1 to Q11 are 1 (0.2%), 1 (0.2%), 1 (0.2%), 4 (0.8%), 5 (1.0%), 4 (0.8%), 4 (0.8%), 10 (2.0%), 4 (0.8%), 4 (0.8%), 1 (0.2%), respectively.